

Serial No. 09/225,245
November 29, 2004
Page 2

Complete Listing of Claims:

1. (Currently amended) An interference wave detecting device incorporated into a base station of a wireless communication system, comprising:

transmitting means for converting data to be transmitted from said base station into a radio signal of a predetermined transmission frequency, and for transmitting said radio signal to a mobile station;

receiving means for receiving either of a radio signal lying within a certain reception band of frequencies including a predetermined reception frequency from said mobile station and an interference wave signal lying within a certain transmission band of frequencies including said predetermined transmission frequency, said predetermined reception frequency being different from said predetermined transmission frequency;
and

controlling means for causing said transmitting means to stop transmitting said radio signal of said predetermined transmission frequency in order to detect said interference wave signal, and for enabling said receiving means to receive said interference wave signal only within a period of time during which said transmitting means stops transmitting said radio signal of said predetermined transmission frequency to said mobile station.

2. (Original) The interference wave detecting device according to Claim 1, wherein when said receiving means has received and detected said interference wave signal having a frequency equal to said predetermined transmission frequency, said controlling means makes a request to change said predetermined transmission frequency to another transmission frequency, and wherein when said receiving means has received and detected said interference wave signal lying within said transmission band of frequencies, but having a frequency different from said predetermined transmission frequency, said controlling means furnishes a notify signal indicating the detection of the interference wave signal.

3. (Original) The interference wave detecting device according to Claim 1, wherein only when said transmitting means is transmitting one or more continuous null time slots of

Serial No. 09/225,245

November 29, 2004

Page 3

said radio signal, said control means causes said transmitting means to stop transmitting said radio signal of said predetermined transmission frequency to said mobile station.

4. (Original) The interference wave detecting device according to Claim 3, wherein only when said receiving means is receiving one or more continuous null time slots of said radio signal from said mobile station, said control means enables said receiving means to receive said interference wave signal.

5. (Original) The interference wave detecting device according to Claim 3, wherein in order to detect said interference wave signal lying within said transmission band of frequencies, but having a frequency different from said predetermined transmission frequency, said control means causes said receiving means to tune from said predetermined reception frequency to a different reception frequency and then receive said interference wave signal having a frequency different from said predetermined transmission frequency.

6. (Original) The interference wave detecting device according to Claim 5, further comprising a plurality of synthesizers, wherein said control means causes said receiving means to change said predetermined reception frequency to another transmission frequency by switching among said plurality of synthesizers.

7. (Original) The interference wave detecting device according to Claim 1, wherein in order to detect an interference wave signal having the same frequency as said radio signal being transmitted thereto by said mobile station, said controlling means recognizes, as said interference wave signal, said radio signal received by said receiving means within a period of time during which one or more continuous null time slots of said radio signal are being received.

8. (Original) The interference wave detecting device according to Claim 1, wherein in order to detect an interference wave signal lying within a certain reception band of

Serial No. 09/225,245
November 29, 2004
Page 4

frequencies, but having a frequency different from that of said radio signal being transmitted thereto by said mobile station, said controlling means causes said receiving means to tune from said predetermined reception frequency to a different reception frequency within a period of time during which one or more continuous null time slots of said radio signal are being transmitted by said transmitting means, and recognizes, as said interference wave signal, said radio signal received by said receiving means within a period of time during which one or more continuous null time slots of said radio signal are being received, after said receiving means has changed said predetermined reception frequency.

9. (Original) The interference wave detecting device according to Claim 1, wherein said controlling means causes said transmitting means to transmit a radio signal including test data, and, when said receiving means receives said radio signal, compares said test data included in said radio signal transmitted by said transmitting means with test data included in said received radio signal.

10. (Original) An interference wave detecting device comprising:

transmitting means for converting data to be transmitted from a base station into a radio signal of a predetermined transmission frequency, and for transmitting said radio signal to a mobile station;

a first receiving antenna for receiving a signal lying within a certain reception band of frequencies including a predetermined reception frequency from said mobile station;

first high-frequency amplifying means for amplifying said signal received by said first receiving antenna and for allowing only those signal components within the amplified signal to pass which are within a limited range of frequencies;

a second receiving antenna for receiving another signal lying within a certain transmission band of frequencies including a predetermined transmission frequency;

second high-frequency amplifying means for amplifying said other signal received by said second receiving antenna and for allowing only those signal components within the amplified other signal to pass which are within a limited range of frequencies;

first local oscillating means for generating a first local oscillating signal;

Serial No. 09/225,245
November 29, 2004
Page 5

second local oscillating means for generating a second local oscillating signal of a frequency equal to the difference between said predetermined transmission frequency and said predetermined reception frequency;

mixing means for mixing said other signal amplified by said second high-frequency amplifying means and said second local oscillating signal so as to convert said amplified other signal into an output signal of said predetermined reception frequency;

selecting means for selecting either said output signal from said mixing means or said signal of said predetermined reception frequency amplified by said first high-frequency amplifying means, and for furnishing the selected signal;
reception level detecting means for converting said selected signal from said selecting means into an intermediate frequency or IF signal using said first local oscillating signal from said first local oscillating means, and for detecting the level of said selected signal;
and

controlling means for causing said transmitting means to stop transmitting said radio signal and for causing said selecting means to select said output signal of said predetermined reception frequency from said mixing means in order to receive and detect an interference wave signal lying within said transmission band of frequencies.

11. (Previously presented) The Interference wave detecting device according to Claim 10, wherein said first local oscillating means includes two local oscillators for generating two local oscillating signals of different frequencies, and wherein said interference wave detecting device further comprises second selecting means for selectively furnishing either of said two local oscillating signals as said first local oscillating signal to said reception level detecting means according to whether or not to detect an interference wave signal of a frequency equal to said predetermined transmission frequency.

12. (Currently amended) A method of performing from a base station of a wireless communication system detection of interference waves that may interfere with communications carried out between said base station and a mobile station, comprising the steps of:

Serial No. 09/225,245

November 29, 2004

Page 6

converting, at said base station, data to be transmitted from said base station into a radio signal of a predetermined transmission frequency, and transmitting, at said base station, said radio signal to a mobile station;

receiving, at said base station, a radio signal lying within a certain reception band of frequencies including a predetermined reception frequency from said mobile station, said predetermined reception frequency being different from said predetermined transmission frequency; and

in order to detect an interference wave signal lying within a certain transmission band of frequencies including said predetermined transmission frequency, stopping the transmission of said radio signal of the predetermined transmission frequency to said mobile station and receiving, at said base station, said interference wave signal.

13. (Previously presented) The interference wave detecting method according to Claim 12, further comprising the steps of, when said interference wave signal having a frequency equal to said predetermined transmission frequency has been detected, making, at said base station, a request to change said predetermined transmission frequency to another transmission frequency, and, when said interference wave signal lying within said transmission band of frequencies, but having a frequency different from said predetermined transmission frequency has been detected, furnishing, at said base station, a notify signal indicating the detection of the interference wave signal.

14. (Original) The interference wave detecting method according to Claim 12, wherein in said stopping step, the transmission of said radio signal of said predetermined transmission frequency to said mobile station is stopped only when one or more continuous null time slots of said radio signal are being transmitted to said mobile station.

15. (Original) The interference wave detecting method according to Claim 14, further comprising the step of enabling said receiving step of receiving said interference wave signal only when one or more continuous null time slots of said radio signal is being transmitted from said base station.

Serial No. 09/225,245

November 29, 2004

Page 7

16. (Original) The interference wave detecting method according to Claim 14, further comprising the step of, in order to detect an interference wave signal lying within said transmission band of frequencies, but having a frequency different from said predetermined transmission frequency of said radio signal being transmitted to said mobile station, changing said predetermined reception frequency to a different frequency so as to detect said interference wave signal having a frequency which is different from said predetermined transmission frequency.

17. (Original) The interference wave detecting method according to Claim 16, further comprising the steps of providing a plurality of synthesizers, and changing said predetermined reception frequency by switching among said plurality of synthesizers.

18. (Original) The interference wave detecting method according to Claim 12, further comprising the step of, in order to detect an interference wave signal of a frequency equal to said predetermined reception frequency, recognizing, as said interference wave signal, said radio signal received within a period of time during which one or more continuous null time slots of said radio signal are being received.

19. (Original) The interference wave detecting method according to Claim 12, further comprising the steps of, in order to detect an interference wave signal lying within a certain reception band of frequencies, but having a frequency different from that of said radio signal being transmitted by said mobile station, changing said predetermined reception frequency to a different frequency within a period of time during which one or more continuous null time slots of said radio signal are being transmitted to said mobile station, and recognizing, as said interference wave signal, said radio signal received within a period of time during which one or more continuous null time slots of said radio signal are being received, after said predetermined reception frequency has been changed.

20. (Original) The interference wave detecting method according to Claim 12, further comprising the steps of transmitting a radio signal including test data, and, upon receipt

Serial No. 09/225,245
November 29, 2004
Page 8

of said radio signal, comparing said test data included in said radio signal transmitted in said transmitting step with test data included in said received radio signal.